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Symphysiotomy

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New York

REPRINTED FROM

THE AMERICAN JOURNAL OF OBSTETRICS
Vol. XXVIII, No. 5, 1893

NEW YORK

WILLIAM WOOD & COMPANY, PUBLISHERS
1893

presented by the author -



SYMPHYSIOTOMY.¹

THE distinguished honor which the President of the Obstetrical Section of the Pan-American Medical Congress has conferred upon me by choosing me to address you on the point that, at the present moment, more than any other occupies the minds of the greatest obstetricians all over the world, cannot be due to my personal experience with the operation of symphysiotomy, since I have only performed it once,² but must be attributed to an indulgent appreciation of my studies, experiments, and writings on the subject.

I shall not lose any of the brief time allotted to each paper by entering into the history of the operation, further than to remind you that it was proposed in 1768, and performed for the first time in 1777 by the Frenchman Jean René Sigault; kept alive in Italy, especially through the efforts of Prof. Morisani, of Naples; and spread over the whole world by being adopted by Prof. Pinard, of Paris, in 1892. Since then it has been performed so many times that it is not possible any longer to keep track of all the operations, their number probably being not far from two hundred. Of these, as far as known, 26 have been performed in the United States; 4 women have died (15.39 per cent), 4 children were still-born, 4 died within 3 days (30.77 per cent).³

Space Gained.—If the symphysis pubis is cut on the cadaver lying with outstretched legs, the ends of the pubic bones separate only about half an inch (1 centimetre); but if we bend the lower extremities at the hip and the knee, this distance is in-

¹ Read before the Section on Obstetrics of the Pan-American Congress held in Washington, D. C., September, 1893.

² A report of this case, with a study of the operation in general, is found in the American Journal of Medical Sciences, March and April, 1893.

³ Letter from Dr. Robert P. Harris, of Philadelphia, September 2d, 1893.



creased to $1\frac{1}{4}$ or $1\frac{1}{2}$ inches (3 to 4 centimetres), and by pulling on the iliac bones it can easily be extended to $2\frac{3}{4}$ inches (7 centimetres) without injury to the sacro-iliac joints, which, like the symphysis pubis itself, become larger and more mobile during pregnancy. If the separation is carried still further a cracking sound is heard, and rupture takes place in one or both sacro-iliac joints, the right giving way before the left.¹ This ought to be avoided; but if it happens, and no infection has taken place, the joints will heal.

By the separation of the pubic bones considerable space is gained in all directions. A gap is formed in front into which the presenting part enters. If the head presents, the eminence of the anterior parietal bone enters so much into this gap that it has the same effect as if the true conjugate became $\frac{1}{4}$ to $\frac{3}{8}$ inch (6 to 8 millimetres) longer. The distance from the end of the pubic bone to the middle of the promontory increases, at the maximum safe distance between the pubic bones of $2\frac{3}{4}$ inches (7 centimetres), more than $\frac{1}{2}$ inch (14 millimetres). The transverse and oblique diameters, and every line drawn from the promontory to a point on the ilio-pectineal line in front of the transverse diameter, increase from one-quarter to one-half of the distance between the ends of the pubic bones, which, at the safe distance of $2\frac{3}{4}$ inches (7 centimetres), makes about from $\frac{3}{4}$ to $1\frac{1}{2}$ inches (17 to 35 millimetres).

This great gain in space from side to side makes the operation particularly valuable in places where, as in New York and Boston, the most common form of narrow pelvis is the generally contracted, while the flat pelvis is of rare occurrence.

Besides the gain in space obtained on the same level, the ends of the broken ring can be moved up and down perpendicularly, which may offer an additional help during the delivery of the child.

Limits and Indications.—If we have to deal with a child of normal dimensions we can easily calculate what degree of narrowness can be overcome by means of symphysiotomy. The biparietal diameter of the head being $3\frac{3}{4}$ inches (95 millimetres), $\frac{1}{4}$ inch (6 to 8 millimetres) entering in the gap between the pubic bones, and the distance from the end of the pubic bones to the promontory being increased $\frac{1}{2}$ inch (14 millimetres), $\frac{3}{4}$ inch (20 to 22 millimetres) is gained in the length of the true conjugate.

¹ Döderlein, Centralbl. f. Gynäk., 1893, vol. xvii., No. 22, p. 499.

Taking, furthermore, into consideration the compressibility of the head, which is estimated at $\frac{1}{4}$ inch (6 to 7 millimetres), we find that at a conjugate of at least 3 inches (75 millimetres) we may expect an easy and safe delivery, and that the operation may be performed, although with difficulty, with a true conjugate measuring only $2\frac{3}{4}$ inches (7 centimetres). If the child is small we may even venture below this limit, Leopold having operated successfully with a conjugate of 6 centimetres ($2\frac{3}{8}$ inches).¹

As to the upper limit for symphysiotomy, it ought, in a flat pelvis, to be placed at a true conjugate of $3\frac{1}{2}$ inches (9 centimetres), above which forceps or version offers the proper means of delivery. If the pelvis is generally contracted I think the limit must be extended to 4 inches (10 centimetres).

Before symphysiotomy can intelligently be resorted to it must be preceded by accurate pelvimetry; and by flexing the lower extremities in hip and knee joint, and abducting the thighs, the accoucheur must satisfy himself that the mobility of the sacro-iliac joints is unimpaired. Furthermore, the cervix must be dilated or dilatable.

Symphysiotomy may render good service under other circumstances than a narrow pelvis. It has been used in impacted occipito-posterior position,² in a case of pelvic tumor,³ and to deliver a torn-off head in a case of tetanus uteri.⁴ It has also been used after the death of the child instead of embryotomy in a case of great contraction,⁵ and in a case in which extraction proved impossible after craniotomy.⁶ It has been recommended for mento-posterior face presentations in which the chin can not be rotated forward.

Modus Operandi.—A point of great practical importance is to decide on the best way of operating. At present two methods are used.

Morisani makes an incision in the median line $1\frac{1}{4}$ inches (3 centimetres) long and ending $\frac{1}{2}$ to $\frac{1}{8}$ inch (1 to 2 centimetres) above the symphysis. Next he makes small transverse incisions into the pyramidalis muscles on both sides, so as to gain room for the introduction of the left index finger behind the symphysis,

¹ Leopold, *Centralbl. f. Gynäk.*, 1893, No. 23, p. 547.

² R. A. Murray. ³ Lepage.

⁴ Friedrich Schwarz, *Centralbl. f. Gynäk.*, 1893, vol. xvii., No. 5, p. 84.

⁵ Queirel, *Centralbl. f. Gynäk.*, 1893, No. 24, p. 576.

⁶ Beugnies, *ibid.*

down to the lower end of it. Upon the finger he slides a strong sickle-shaped knife (Galbiati's *falcetta*), and cuts the subpubic ligament and the symphysis from below upward and from behind forward.

The open method was the original one of Sigault, has been reinstated by Pinard, and has been used by myself and most modern operators. A longitudinal incision is made in front of the symphysis, and extended sufficiently above to have easy access to the latter, and below to the root of the clitoris, or deviating to the left, while the urethra is carried with a metal catheter over to the right into the vulva, between the labium majus and minus. My own incision was of the latter kind and measured four inches in length, the patient being a stout woman with a thick layer of adipose tissue on the mons Veneris.

Each of these methods has its advantages and drawbacks. The subcutaneous method recommends itself by its great simplicity, it gives, in most cases, rise to much less hemorrhage, and the wound can be kept perfectly aseptic. On the other hand, if there is hemorrhage at the bottom of this deep wound, it can only be treated with tamponade, which, although rarely, occasionally has proved insufficient. The open method allows the operator to cut in the way he finds it most easy, and the symphysis being much broader in front than behind, and having a well-marked notch at the upper end, it is often preferable to cut from the front backward and from above downward. As hemorrhage is especially likely to occur at the lower end, it is even an advantage to cut this part last. I cut from above and behind downward and forward with a common concave bistoury. The open method has, furthermore, the advantage that the operator can see where the blood comes from and can carry ligatures with curved needles around vessels or oozing tissues. But, on the other hand, it has the drawback, if the incision is long, that lochial discharge bathes the lower end of the wound and causes fever. Thus Zweifel, operating in a hospital, with strictest antiseptis, had only 3 cases in 14 that were free from fever, and often the temperature ran very high up,¹ as it did in mine. If the soft parts are injured the open method may become necessary in order to repair them. If the symphysis is ossified and must be severed with a chain saw, as has happened several times, I think the open method also becomes necessary in order

¹ Zweifel, *Centralbl. f. Gynäk.*, 1893, No. 22, p. 499.

to work the saw and remove the bone dust. Taking the *pros* and the *cons* into due consideration, I think that the next time I have the opportunity of performing the operation I shall try the Italian method first, and only have recourse to the French if there is uncontrollable hemorrhage, if the repairs of injuries demand it, or the symphysis cannot be cut.

Even if we cut from above, the subpubic ligament must be included in the incision, as otherwise we do not gain space enough to let the child pass, or the ligament is torn by its passage.

As a rule, hemorrhage can be checked by tamponing the wound with iodoform gauze, if at the same time we tampon the vagina so as to get counter-pressure from this side, and the application of the two sides of the wound against each other helps also much to check the bleeding. Sometimes it has, however, been necessary to tie arteries, veins, or the crura clitoridis on both sides.

Another point of interest is to decide what is to be done after cutting the symphysis and arresting hemorrhage. Morisani leaves the further progress of labor to Nature, and uses forceps if it becomes necessary. In this he has been followed by Zweifel,¹ who has waited as much as fourteen hours. If labor pains are present such expectation has undoubtedly great advantages both for mother and child. The cervix gets time to dilate, and the natural expulsive efforts will be less likely to hurt the child than any kind of artificial delivery. But if there are no labor pains, as in my case, the woman must be delivered at once. The patient and her friends may also object to leaving her in labor pains for many hours, aggravated by pain in the wound. She would have to be anesthetized twice. In private practice it would be difficult for the operator to watch the case and be present at the right moment. Most obstetricians prefer, therefore, to deliver at once after severing the symphysis. In so doing I think we should be guided, in the choice of the method of delivery, by the rule to use version and extraction if the head is movable, and forceps if it is engaged in the pelvis. If the cervix is not sufficiently dilated, incisions in it may lead to complete retraction over the head.²

In regard to the *closure of the wound* there obtains great diversity in practice. Several go so far as to bore holes in the

¹ Zweifel, l. c.

² Ekstein, Centralbl. f. Gynäk., 1893, No. 19, p. 443.

ends of the bones and unite them with silver sutures, which are removed after ten days, as otherwise they would interfere with a repetition of the operation. This appears to me an unnecessary complication of the operation. Leopold¹ recommends suturing the cartilage with buried silk sutures, which I and others have found it impossible to do because the cartilage was not thick enough to pass any sutures through it. Many unite the tendinous tissue in front of the pubic bones with such buried sutures, which I did; but I even doubt if that is necessary when proper pressure is exercised on the trochanters. The soft parts, skin, and adipose tissue should under all circumstances be united by deep and superficial silk sutures, which are left in for a week or ten days. Drainage is superfluous. In order to keep the two halves of the pelvis together nothing is better than rubber adhesive plaster. I carried three straps 2 inches (5 centimetres) wide around the trochanters, crossing them on the abdomen above the wound. They were left on for three weeks and caused only slight excoriations, while they gave no pain, kept the bones in apposition, and allowed us easily to lift the patient on the bedpan. While they are being applied, and during after-treatment, the patient should lie with outstretched legs, the knees kept together, and the feet turned inward, as this position of itself approximates the ends of the bones.

Maternal Injuries.—Quite a number of operators, especially German, have reported considerable injury to the vagina, the urethra, and the bladder, which occurred in consequence of the tension to which the soft parts are subjected during the extraction of the child. The bladder may likewise be caught in approximating the pubic bones, if care is not taken to push it back in closing the wound. In order to avoid the injuries due to tension it is advisable, in forceps extractions, to pull well back and rather risk a tear of the perineum, or perform episiotomy, than to expose the finer organs in front. To protect the vagina with a vectis-like instrument, as proposed by H. W. Freund,² will hardly be practicable. Even to place the hand in the gap between the bones, as recommended by Schauta,³ seems to me to be more likely to increase the tension than to lessen it. The chief thing is to extract very slowly and in the right direction.

¹ Leopold, *Centralbl. f. Gynäk.*, 1892, vol. xvi., No. 30.

² H. W. Freund, *Centralbl. f. Gynäk.*, 1893, No. 23, p. 521.

³ Schauta, *Centralbl. f. Gynäk.*, 1893, vol. xvii., p. 432.

If such injuries occur they should be repaired immediately with silk or catgut sutures. If there is a tear in the bladder it should be closed with continuous catgut tier sutures, one applied to the mucous membrane, the other to the muscular coat and the peritoneum.

If a vesico-vaginal fistula appears later, it heals, as a rule, spontaneously, and if it does not it can be closed by operation.

Prognosis.—Varnier¹ has in 124 modern operations found a maternal mortality of 9 per cent, but in by far most cases death is not attributable to the operation. Properly performed, and within the proper limits, I think the prognosis for the mother is very good, not only as to life, but also complete restitution. The gait becomes as perfect as ever. Pinard has not lost a case in 18 operations, nor Zweifel in 14 operations. In Italy there have, from 1886 to 1893, been 48 operations with only 2 deaths.²

For the child the prognosis is more serious. Varnier, in the above-mentioned list, found an infantile mortality of 22.7 per cent. Very many are born asphyctic and are not always revived. Some have had their cranium fractured during extraction with forceps or hand. This great mortality can doubtless be much diminished if we desist from all other attempts at delivery in cases in which symphysiotomy is indicated. It seems to me we expose both mother and child to unnecessary danger by trying to deliver with high forceps before performing symphysiotomy. The child may also be protected by having the iliac bones of the mother separated by assistants during extraction, instead of using the child itself as a wedge to expand the pelvis. All means of resuscitation must be kept in readiness and applied to the child if it is asphyctic.

The combined mortality for mother and child in Varnier's list, after deducting 5 children that were dead before the operation, is 16 per cent.

Relation to other Obstetric Operations.—Finally, we will inquire what importance the revival of symphysiotomy has, and whether it is called to change our obstetric practice and teaching. It is an operation that sometimes is so simple that a tyro can perform it, but at other times so difficult and complicated that no one should undertake it who is not qualified to perform a Cesarean section. It is, therefore, eminently an operation for

¹ Varnier, *Journal of the Medical Sciences*, July, 1893, p. 112.

² Private communication from Dr. Robert P. Harris, June 30th, 1893.

experts. It may, however, be performed in private practice as well as in lying-in institutions. For the mere medical obstetrician nothing is changed by the re-introduction of symphysiotomy; but for the operative obstetrician, the gynecologist, and the general surgeon engaged in obstetric practice, the greatest changes are, in my opinion, to be made in the choice of operations by which we meet the mechanical disproportion between mother and child.

Craniotomy on the living child, or, what is still worse, expectation till the child is dead, followed by craniotomy, ought never to be thought of in any community in which it is possible to obtain the assistance of a man able to perform symphysiotomy.

Induction of premature labor is accompanied by only about one-half of the maternal mortality of symphysiotomy (namely, 5 per cent), but then it has no less than 43 per cent infantile mortality¹—that is, a combined mortality of 24 per cent—while in symphysiotomy it is only 16 per cent. In cases in which the mother's life is to be preferred—and, as a rule, the life of a grown-up person, with the manifold ties of life, a wife, and perhaps mother of other children, ought to weigh more than that of an unborn child—induction of premature labor retains its position; but in others, in which the child's life is of particular importance, symphysiotomy is to be preferred, the infantile mortality being only about half as large as in the other operation—22 against 43 per cent. By combining the two the limit of the induction of premature labor may be extended somewhat.

Cesarean section has a combined mortality of 16 per cent, the same as symphysiotomy, and the infantile mortality is only two-thirds as large as in the latter—6 against 9 per cent.² But the maternal mortality is nearly three times as large—26 against 9 per cent. With proper respect for the mother's life, there can, therefore, be no hesitation in regard to the preferability of symphysiotomy.

Symphysiotomy competes even with *Porro's operation*, since it has been successfully performed when the woman had been for many days in labor, whereas the Porro operation is accompanied by the fearful mortality of 57 per cent.

Any form of Cesarean section ought, therefore, to be confined

¹ Wyder, Archiv f. Gynäk., 1888, vol. xxxii., p. 60.

² Caruso, Archiv f. Gynäk., 1888, vol. xxxiii., p. 255.

to the cases in which the coarctation goes beyond the limits for symphysiotomy.

Even difficult forceps and version operations ought to be replaced by symphysiotomy, since these operations, when the true conjugate is less than $3\frac{1}{4}$ inches (8.5 centimetres), entail much greater mortality for both mother and child, and the latter, if it survives, is apt to become epileptic or idiotic.

Symphysiotomy has already in several cases been successfully repeated on the same woman.

It is evident that if the child were unusually large the operation would be indicated even with a normal pelvis.

When great force is exercised in pulling on the forceps it sometimes happens that the symphysis is ruptured—cases that have a very good prognosis. How much more may we expect to see the woman recover if we substitute a methodical wound for the irregular tears and profound bruises resulting from forcible extraction and rupture?

In my opinion symphysiotomy is a valuable addition to our obstetrical resources, which ought to be performed frequently in maternities and in private specialist practice.

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